501 396 His constructive skill with wood has been most successfully expressed in the vehicles for land and water transport—the bullock cart and the canoe. The classic pattern for a Burmese boat is the *laung*, built from a single hollowed-out trunk of the *thingan*, a tough tree growing near the water with a girth of 4—20 feet and a height of 15—75 feet. The trunk is hollowed out into a rough hull, the outside is adzed, circles of holes are bored through for a guide, and the shell is hollowed to a uniform thickness. It is then waterlogged, and fired slowly, the symmetry being carefully tended as the hull opens out with the firing. Planks are built up on the sides to increase capacity. These laungs, of a capacity from 10—40 tons, are the universal canoes of the rivers and creeks of Burma. Poled upstream and rowed downstream, they are ideal in the ease with which they can be bumped against rocks or got off shoals, the thingan hull lasting for 20 or 30 years. The bigger boats which still carry rice and other produce up the Irrawaddy are built up from stout ribs on a style which simulates the solid hull of the laung. These boats carry enormous sails and a crew of about fifteen men. Their bulk-heads are richly carved, and they glide along the great Irrawaddy, stately and calm beside the chugging river-steamers, their prows rising and falling like the heads of some fabulous birds.

493 The Burmese cart is a poem in curves of wood. The floor of the cart gives a slight curving sweep from front to back, the sides exaggerate this in crescents that sweep right up into the air, and the circle of the wheel has good balance and strength behind its symmetry. For the sake of the curves, the root wood of cutch and the curved branches of thingan are specially sought out.

326 Brassware, for which the old centres were at Amarapura and Sagaing 788 in Upper Burma, we were familiar with in bells and gongs. Bells are 534 kept by the Burmese for sacred uses only. The delicate small bells hung high around the spires of pagodas, often of gold and silver, have tongues that are moved by the winds to give a sweet testimony, to all spirits, of the good work of men who built the pagoda and other men who pray below, and give the praying devotee a tinkling reassurance of his merit. The great big bells, however, made of molten copper and tin poured into moulds of clay and wax in pits dug in the earth, have no tongues; but when struck with deer's antlers or a wooden striker they [552] sing a deep note of sweetness. The names given to some famous bells reflect their beauty: *Maha Ganda* (Great Voice), *Mahatti Thadda Ganda* (Great Sweet Sound). All big bells are hung on a cross bar with wooden supports at pagodas, where after recitation of precepts we picked up the striker in turn and struck three times to announce to the spirits

25: Ferrars E-5 (ca. 1890) 1901 APl Burma
Burmese AP4

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396

295. ROUGH-HEWING THE BOAT-HULL.

ties, especially in the floods. The building of boats is the art that most of all exercised the constructive skill of the people. The type of Burman boat, small and large, is the *laung*. It differs greatly from the ordinary dug-out of the Shans and others, and, if it implies a waste of timber as compared with the built-up craft, it still produces from a given log a hull of more than double the capacity of the dug-out. It bears bumping against rocks and snags better even than the dug-out, because the grain is nowhere cross. The wood preferred for hulls is *thingán*, which is tough and durable, steams well, and grows near the water. A sound straight tree of four to twenty feet girth and fifteen to seventy-five feet length is felled and hewn into a rough cylinder. A narrow groove, about one-tenth of the girth, but not less than six inches wide, is sunk along the flattest aspect of the log for about seven-eighths of the length. The ends are left solid, and the groove is cut down for two-thirds of the thickness of the log. Through this groove the log is hollowed out into a shell having a section like the letter C. The tool used (*kyettaung*) is a solid chisel of several pounds weight, lashed with rattan to a tee-headed handle, made from a branch, which allows of the tool being set at various angles and every part of the interior being reached, while keeping clear of the edges of the groove. Lightened of more than half its mass, the log is dragged to the water and floated to the builder's yard. Here the rough hull is adzed true outside. Circles of holes are bored through, at intervals, for a guide, and the shell is hollowed to a uniform thickness with the *kyettaung* and other special tools. Then the holes are plugged up

296. OPENING OUT THE BOAT-HULL.

25: Ferrars E-5 (ca. 1890) 1901 AP1 Burma
Burmese AP4

396

297. BOAT-BUILDER'S YARD (PEGU).

and the hull filled with water. When the wood is waterlogged, the hull is emptied and a slow fire made under its whole length. The edges of the original slot, which now blend into stem and stern and only remain vertical amidships, are gripped by two rows of wooden vee's lashed by green creepers, wet ropes, or iron chains, to long levers that have the bottom of the boat for fulcrum. From the power-ends of the levers, ropes are belayed to two bamboo rails pegged to the ground on each side. As the heat takes effect, and the hull opens out, its symmetry is carefully watched until the originally vertical edges of the slot are horizontal. The beam is now double what it was and the displacement several times greater. The opening out is allowed to go somewhat beyond the intended beam, and recesses are cut for the stout thwarts (*pagán-byin*). These are then put in place, and the shell allowed to close upon them. The levers are left in position till the wood is quite rigid. The capacity of the boat is further increased by building on sides above the solid hull. These consist of long seamless planks, stiffened by mouldings and ribs, and in the case of cargo-boats by an upper tier of thwarts; the join is luted from the outer side with bee-dammar (*pínnyet*). Such boats are built of a capacity of ten to forty tons. The rounded solid hull (*laung-gó*) is the most serviceable for the rivers of Burma, on account of the ease of getting it off shoals; the boat can be worked about in every direction till it wears a

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298. LAUNG-GO POLING AGAINST A RAPID.